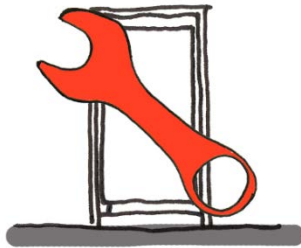


MAINTAINING TOILETS FOR BETTER HEALTH (MTBH)

Final Report September 2018

Training and establishment of the WASSUP MTBH program –Diepsloot, Johannesburg



IWSH.org
The International Water, Sanitation and Hygiene Foundation



AUSTRALIAN HIGH COMMISSION
PRETORIA
Direct Aid Program (DAP)

W.A.S.S.U.P



HEALTHABITAT O/S LTD

In 2014 Healthabitat began working with Sticky Situations and WASSUP on the ground in Diepsloot to improve the design and construction of toilet and tap points on the streets of Diepsloot, Johannesburg.

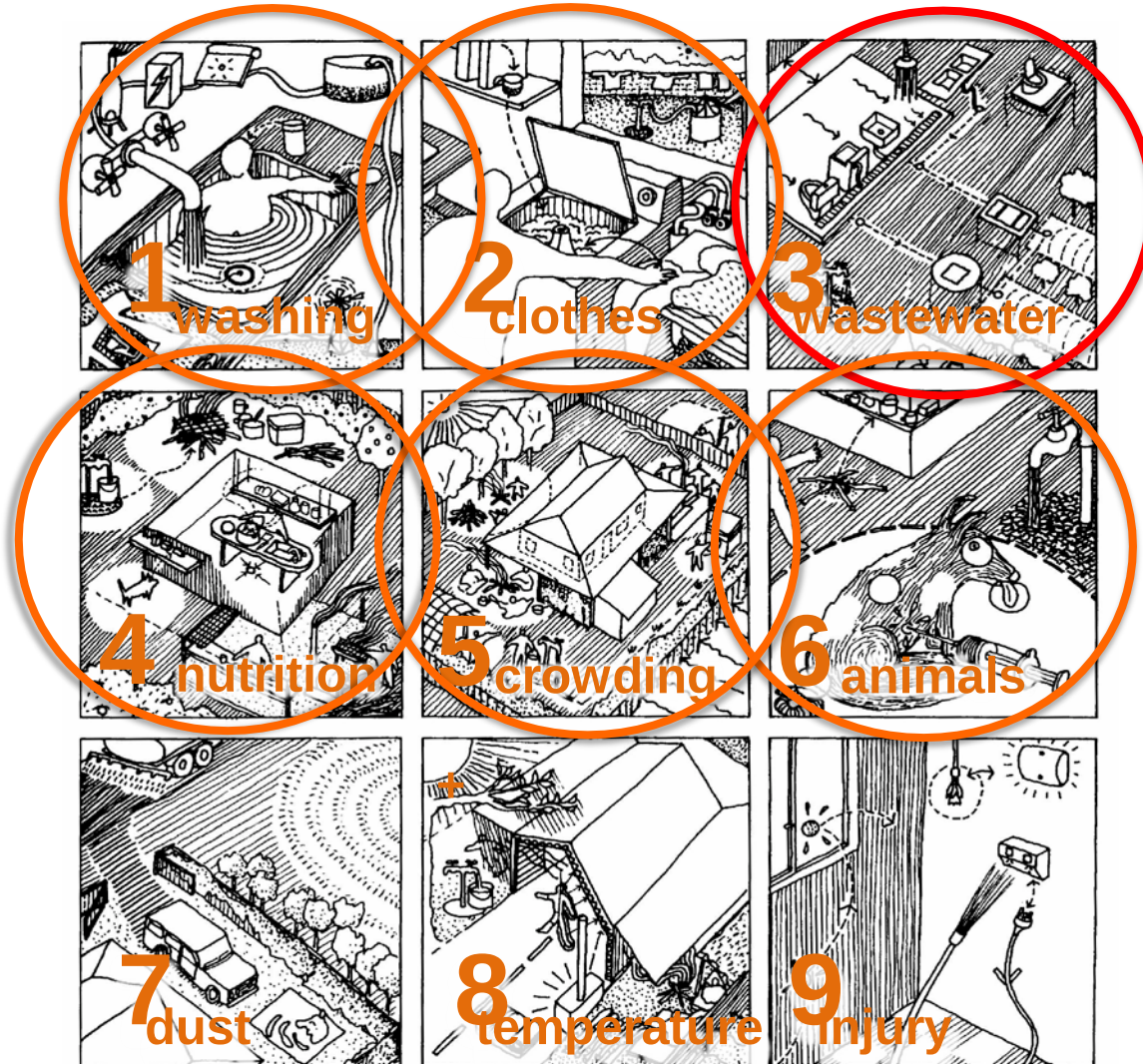
By 2016, with funding from the World Skills Foundation, IAPMO and Johannesburg Water, 100 toilets had been upgraded through the program.

At the same time what was becoming evident was that without **on-going follow up maintenance**, improvements made to people's lives through access to functioning water and sanitation could be short lived.

This aspect of the project aims to demonstrate the health, water and financial impact of an ongoing cyclical maintenance program for the 100 upgraded toilets.



The 9 Healthy Living Practices



Health and the South Africa Health Improvement Project

The Maintaining Toilets for Better Health Project is a key component of the **South Africa Health Improvement Project**, which aims to improve public health. Since 1985 Healthabitat has used the 9 Healthy Living Practices (HLPs) as the core principles of any project.

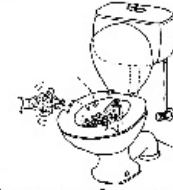
In this project improvements to 6 HLP's is expected.

- 1) Water in for washing (1), clothes washing in tubs (2), wastewater removal (3) and cooking (4). The crowded environment of Diepsloot made it essential to limit the 'down time' of any water supply, toilets or wastewater facilities. (5)
- 2) Waste water safely removed – drainage, checking of mains lines and remaking of drainage points. Better removal of wastewater from the dirt streets will reduce insects and vermin. (6)
- 3) Future works, already commenced, will address privacy and ease of cleaning.

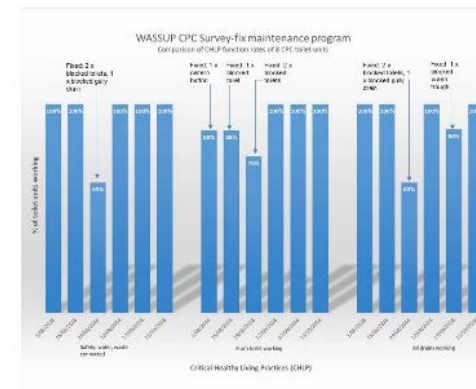
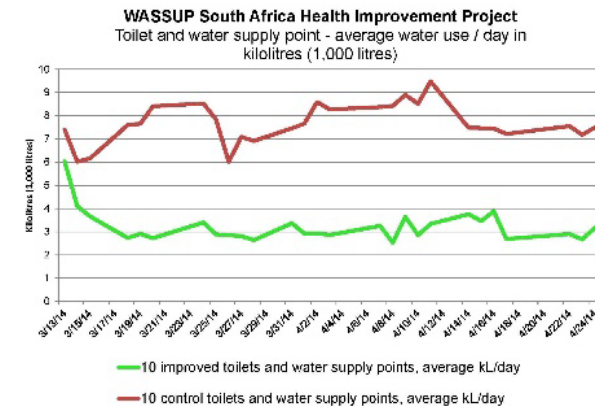
What the MHBH project hoped to achieve

1. Establishment of an efficient, responsive **Repair & Maintenance Program** across the 100 toilet units and water access points. Establishing a strong resilient local team and providing long term local employment
2. Through the ongoing collection and analysis of water use data, **demonstrate the reductions in lost water through fixing leaks** and the protection on capital investment that can be achieved through an effective Repair & Maintenance program
3. Through the collection and analysis of Healthy Living Practice (HLP) data, **demonstrate the health improvements that can be achieved** through funding and supporting a repairs and maintenance program across the toilet units in Diepsloot. The project aims to demonstrate improvements by tracking **function rates of health hardware** (taps, cisterns, drains door locks etc) across all of the toilet units and water access points included in the trial

100%



Removing waste
Toilet working



1. Establishment of an efficient, responsive **Repair & Maintenance Program**

In March 2017 WASSUP hosted workshops to develop its Repair & Maintenance Systems

EMERGENCY REPAIR & MAINTENANCE

Through role play workshops with WASSUP, work flow diagrams, repair response times and processes for reporting and completing resident emergency repair requests were developed and agreed

Agreed timeframes for completing
Emergency R&M requests;

IMMEDIATE (within 4 hours)



Blocked drain, blocked toilet,
blocked trough, burst water,
dirty water inside or outside
toilet, contaminated water
supply

URGENT (within 2 days)

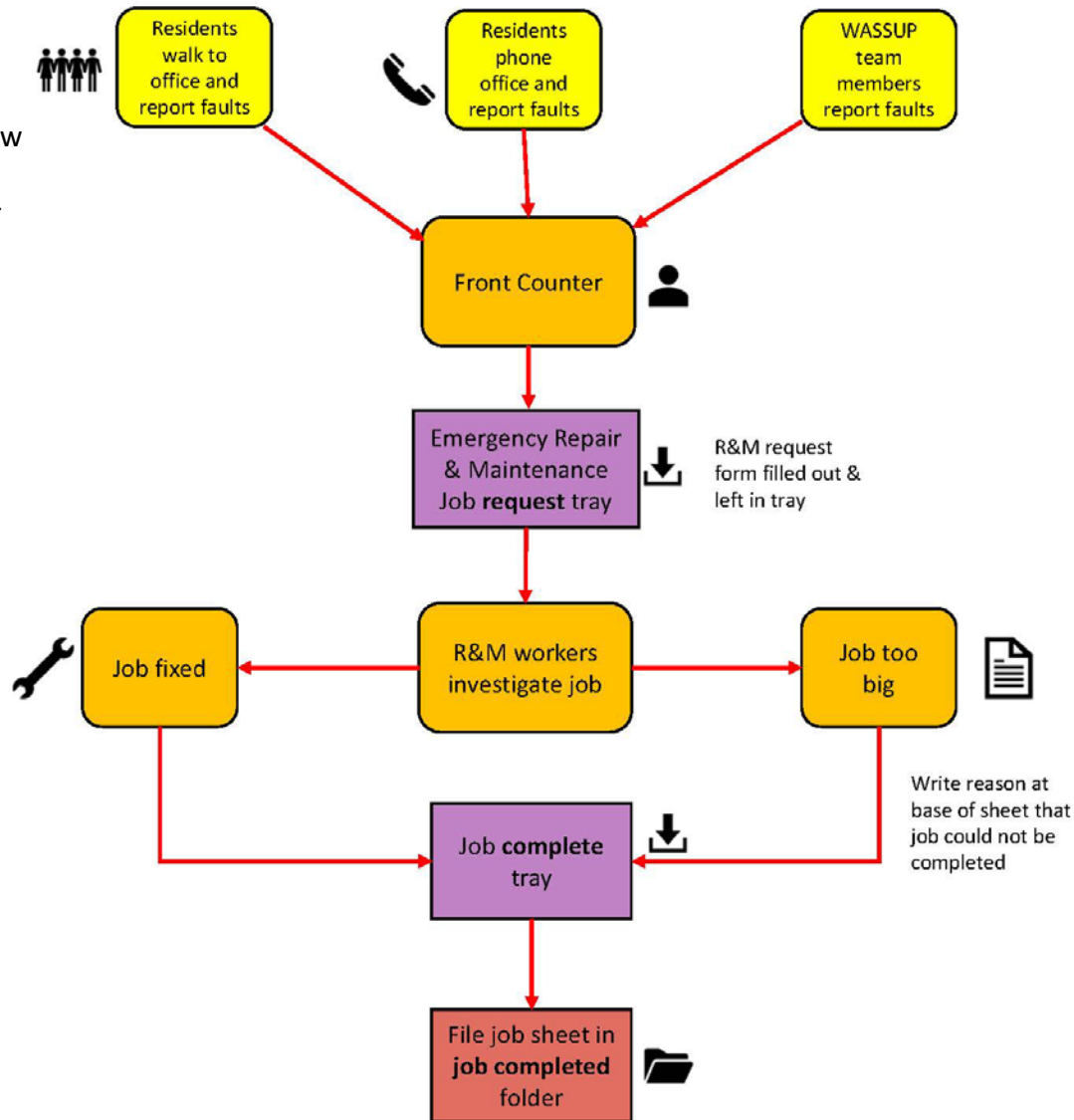


Overflowing cistern, leaking
tap, small leaks, cracked pan

ROUTINE (within 3 months)



Door broken, door lock,
cracked walls



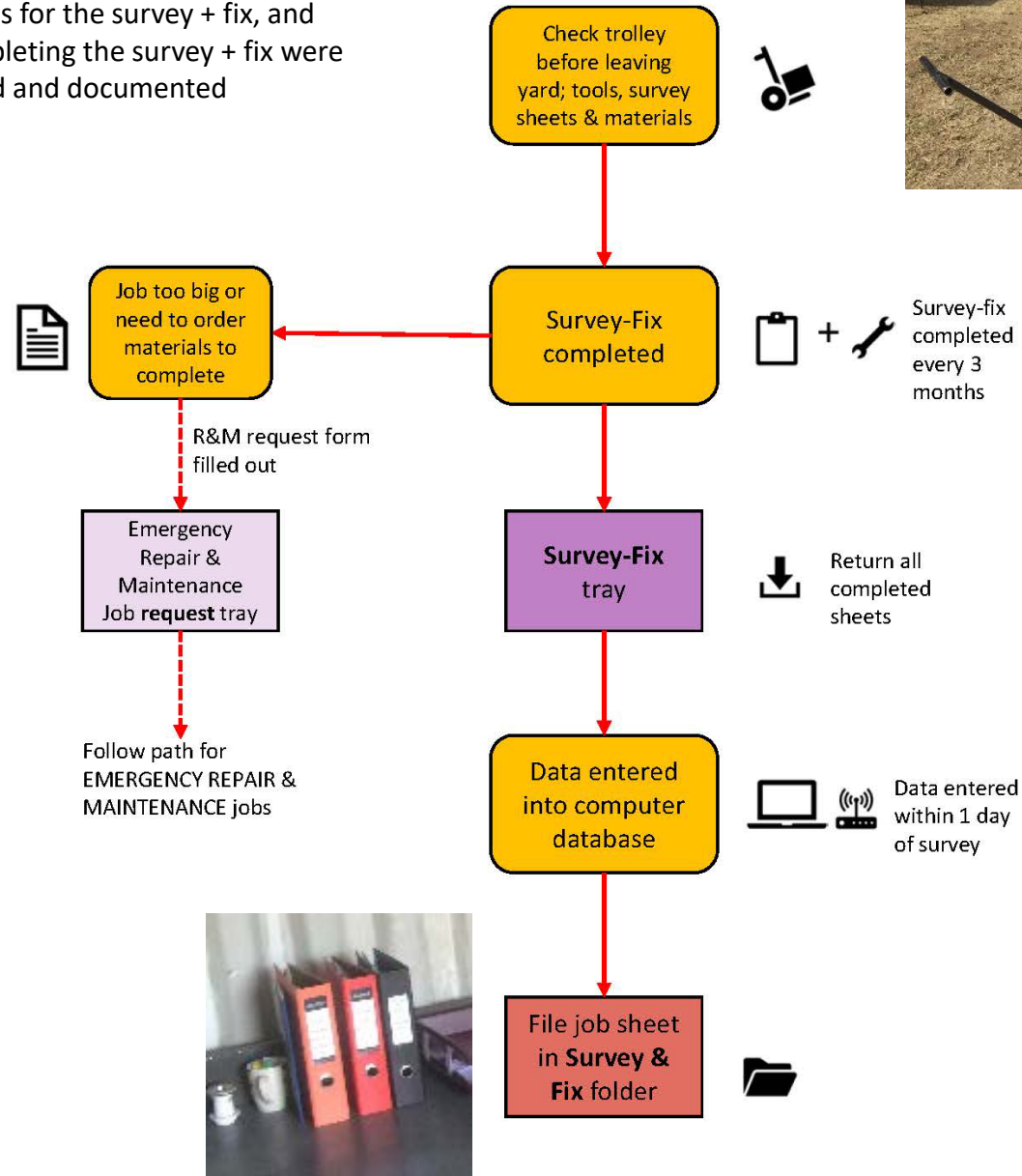
The form is titled 'WASSUP Emergency Repair & Maintenance sheet' and includes a 'TOILET NO.' field. It contains sections for 'Request by (name):', 'Phone number:', 'Request:', 'Work completed by (name):', 'Date work completed:', 'Work done (description):', 'Time taken:', and 'Phone used:'. There are also checkboxes for 'Immediate or urgent' (e.g., burst or no water, blocked drain), 'Urgent or urgent' (e.g., no tap working, cistern not working), and 'Routine or routine' (e.g., door repair, holes in wall).

SURVEY + FIX WORK FLOW DIAGRAM

Survey-fix of all toilets to be completed in 2 weeks from the start date

Survey-fix commencement dates each year;
SF1 – 1st week April
SF2 – 1st week July
SF3 – 1st week October
SF4 – 1st week January

Work flow diagrams for the survey + fix, and processes for completing the survey + fix were trialled, and agreed and documented





WASSUP established a new office, front counter and material/ tool store. Establishing a strong resilient team, and creating sustainable local employment has been critical to the success of this project



We are WASSUP Diepsloot
Water, Amenities, Sanitation, Services Upgrading Program



We are a cooperative of local residents, equal gender distribution, who have mobilized to repair and maintain communal toilets in our community



"When you go into
the toilet you go in
with dignity,
When you come out
of the toilet you come
out with dignity"



Class C
HKD2364

Diepsloot Sanitation Project
WASSUP Water Meter Reading Sheet
DATE 12/03/2014
TIME 10:05 PM

1	0	0	4	4	6	4	4
2	0	0	2	9	1	4	2
3	0	0	0	5	5	9	0
4	0	0	4	4	3	5	9
5	0	0	2	8	5	8	8
6	0	0	2	9	7	7	9
9	0	0	2	0	6	5	4
10	0	0	2	3	3	0	1
11	0	0	1	2	0	3	6
12	0	0	1	5	6	0	6
15	0	0	7	5	0	2	1
16	0	0	8	8	1	3	3
17	0	0	6	9	6	0	1
18	0	0	6	4	0	4	0
19	0	0	5	9	2	4	0
20	0	0	2	9	7	5	2
21	0	0	1	1	2	6	0
22	0	0	3	8	6	4	7
23	0	0	0	4	8	0	6
24	0	0	0	3	4	0	4

2. Demonstrate the reductions in lost water through fixing leaks

Since 2014 regular water meter reading by WASSUP have helped provide information on:

- toilet use and overall water use per toilet
- tap point use
- mapping of toilets that have high and low use
- cyclical use trends
- leaks and failures of all parts of the system.

This in turn has lead to:

- the specifying of better hardware
- a better understanding of the loading placed on the wastewater system
- the ability to compare the performance of toilets and tap points with improved hardware to the unmodified toilets.

LEFT TOP the toilet, meter and isolation (stop) valve

LEFT LOWER the water meter

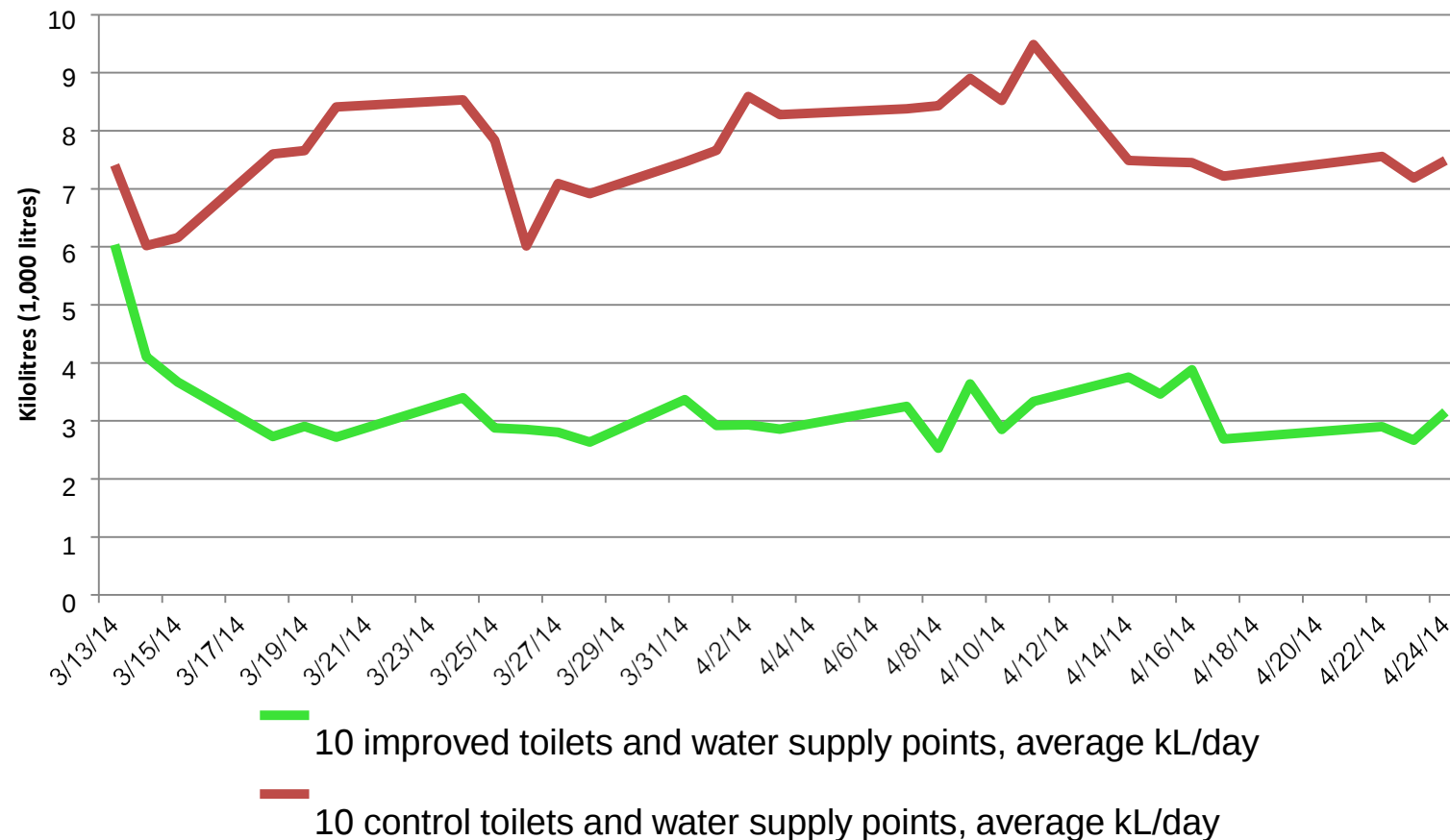
CENTRE a daily water meter reading sheet completed by WASSUP

Water use – early analysis from 2014

average volume used per toilet and tap point every day – improved / control

After only 42 days, the water meter readings show the difference between the improved toilets/ tap points and the control group, with an average difference per toilet of over 4,000 litres per day. This could mean around 13 million litres of wasted water a day passes through the other 110 toilets being managed by WASSUP if the poor existing hardware is not improved.

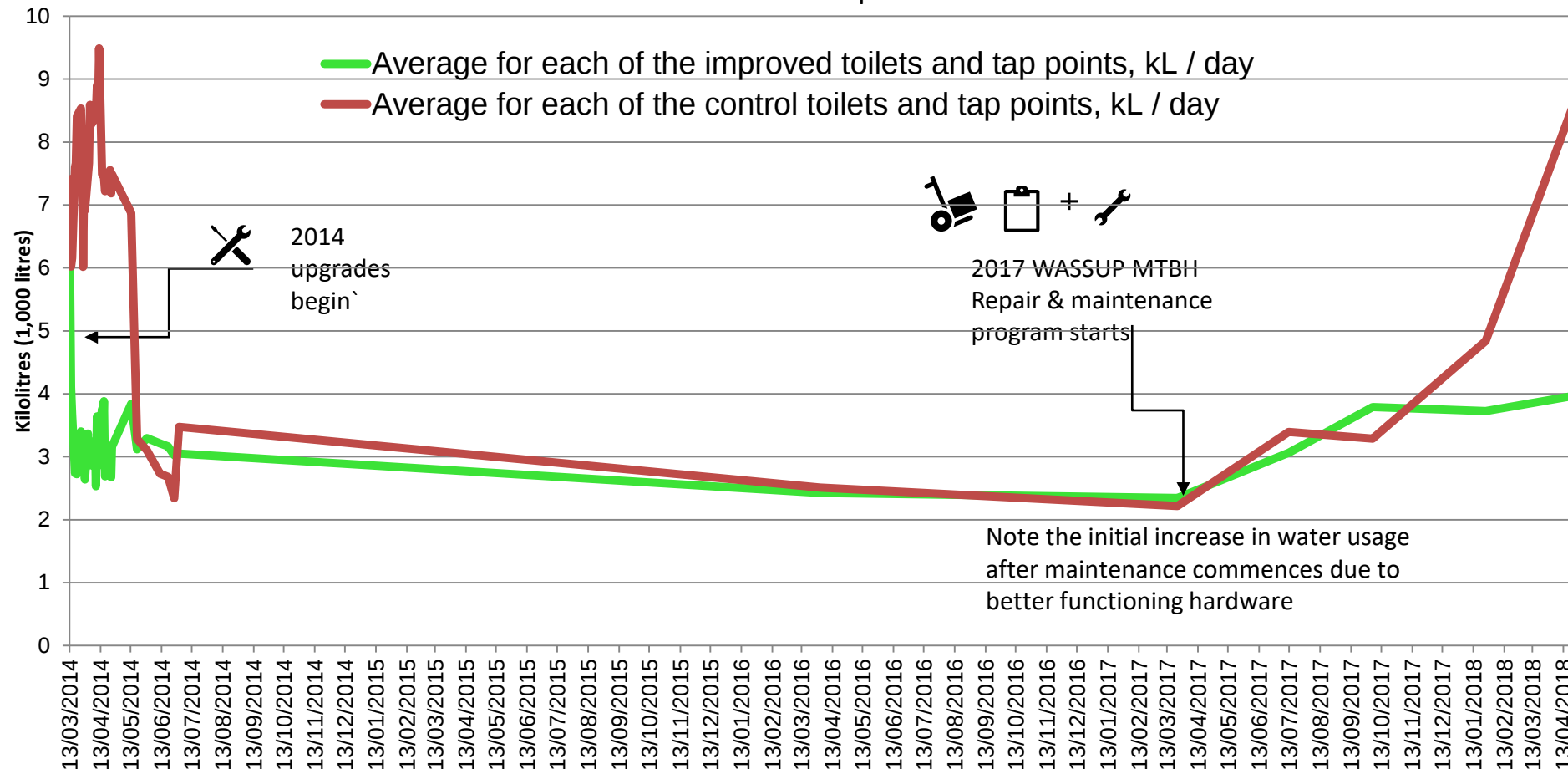
WASSUP South Africa Health Improvement Project Toilet and water supply point - average water use / day in kilolitres (1,000 litres)



Water meter readings continued to be read to **measure the impact the MTBH Repair and Maintenance had on reducing water loss**



WASSUP Diepsloot Sanitation Project
Toilet and tap point - average water use / day / toilet in kilolitres (1,000 litres)
From March 2014 to April 2018



By April 2018
each of the
control toilets
were using
4.64kL
more water per
day than the
maintained
toilets

If replicated
across Diepsloot
Ext 1; 4.64kL x 642
toilets x 365 days
= **1,087,291**
kL/yr in water
savings by
ongoing repairs
and preventing
leaks

If an ongoing R&M program were funded across all 642 toilet systems in Diepsloot Extension 1, the MTBH has shown through these readings that **Johannesburg Water would expect to save:**



1,087,291 kL / year



R 19,571,241 / year

*Based on the retail charge of R18 per Kl
Equivalent to \$1,382,984 USD*



The cost to maintain all 642 toilets in Extension 1 would be less than 8% of this:



R 1,500,000 / year

Equivalent to \$106,040 USD



and provide vital employment for a team of local Diepsloot plumbers

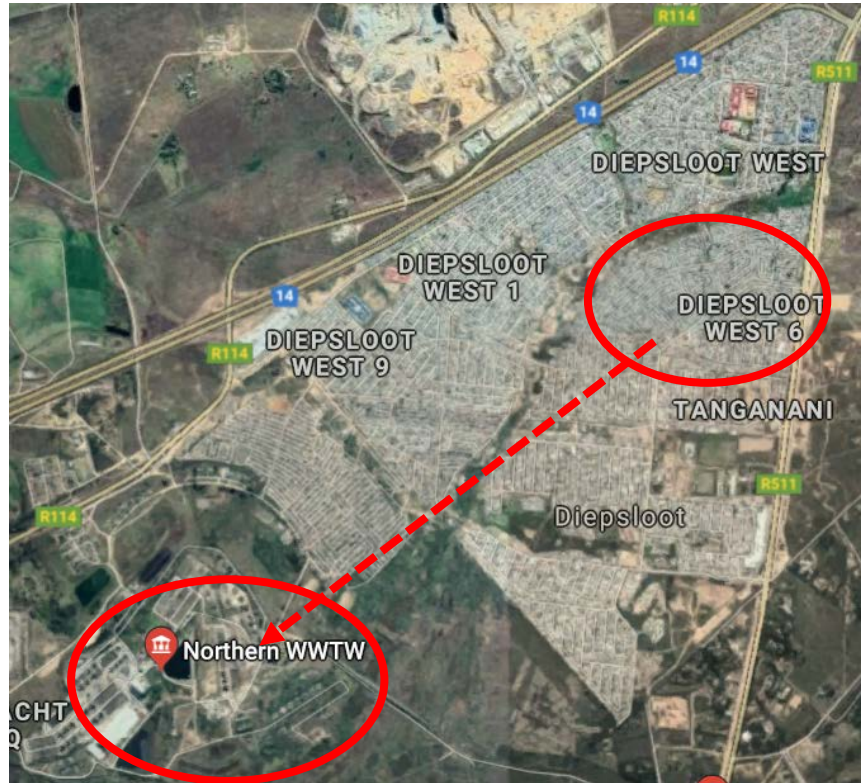


If an ongoing R&M program were funded across all 642 toilet systems in Diepsloot Extension 1 **Johannesburg Water would save millions in avoidable sewerage treatment infrastructure expansion costs:**

Northern Wastewater Treatment Works (Northern WWTW) is on the edge of Diepsloot. Its the largest of 6 treatment works in Johannesburg, designed to treat 450 million litres of raw sewerage a day.



In 2018 its scheduled to undergo a major upgrade to increase capacity by an extra 50 million litres a day



A toilet repair and maintenance program in Ext1 Diepsloot would save an est. 1,087,291 kL a year = 3 million litres of water a day... this is water that currently flows directly to the Northern WWTW.

If a repair and maintenance program is funded this saved water would help to prolong the life of the Northern WWTW, saving millions of Rand in avoidable expansion costs



3. The **health improvement** story

How do we measure the impact of the WASSUP MTBH Program on improved health?

We know that;

Functioning 'health hardware' (eg water supply, taps, drains, cisterns, toilets)



=



Improved health outcomes

Therefore this project aimed to measure the function rates of critical health hardware as a measure of residents ability to access better health – and demonstrate their function rates using the Healthabitat 'Healthy Living Practice' (HLP) scores

The Health Improvement Story

The process; an online MTBH database records and reports survey-fix data

WASSUP survey & fix toilet maintenance sheet

TOILET NO. _____

Date: _____

Score: _____

Fixed: _____

Test: _____

1.1 Water available

1.2 Water pipes OK

2.1 All waste water OK

2.2 Drain waste pipes OK

3.1 Door lock OK

3.2 Door OK

4.1 Walls, roof, floor OK



Data entry

Survey-fix sheet

A new MTBH database was developed to record the results of the survey + fix, which captures the data from the toilet units when the team arrives plus the fixed items completed by the survey team. The database is being developed to be both an ongoing management tool for WASSUP, and a reporting tool to demonstrate the improvements in HLP scores that can be achieved through regular maintenance.

4/4/2017 Maintaining Toilets for Better Health - Healthabitat O/S

HEALTHABITAT O/S

WASSUP survey & fix toilet maintenance sheet

HOME NEW SURVEY SURVEY RESULTS LOGIN/LOGOUT

ADD NEW SURVEY & FIX REPORT

Select 1 for YES it is OK, select 2 for NO it is NOT OK or as directed by the question.

Check the "Fixed" box if item was fixed at the time of the survey.

Toilet Num: _____

Completed by (name): _____

Date: dd/mm/yyyy

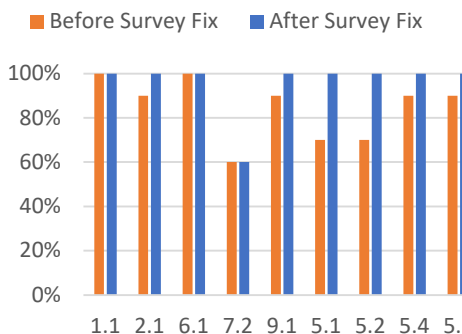
Item description	Score	Fixed	Test
1.1 Water available		☐	Is water connected and working at the time of survey? 1=yes 2=no
1.2 Water pipes OK		☐	Are the water supply pipes OK with no leaks? Are they fixed well to the walls? 1=pass 2=fail
2.1 All waste water OK		☐	1= all OK and no obvious smells, 2=pools of waste water around or inside the toilet, or waste leaks?
2.2 Drain waste pipes OK		☐	Are the drain pipes OK with no cracks or holes? Is the vent pipe OK? 1=pass 2=fail
3.1 Door lock OK		☐	Check if the door locks inside and outside, and allows privacy OK? 1=pass 2=fail
3.2 Door OK		☐	Check door and hinges: no holes, privacy OK and hinges are secure? 1=pass 2=fail
4.1 Walls, roof, floor OK		☐	Are the walls, floor and roof cracked? No holes then OK? 1=pass 2=fail

http://hho-mtbh.mirkwoodserver.com/

Online MTBH database

We are not attempting to measure a change in health status with this program. The importance of these healthy living practices and improving health status has been proved many times elsewhere in the world. The surrogate measure of change in health status will be to measure whether the hardware in toilets is functioning and delivers the ability for people to lead a healthy lifestyle.

Comparison of toilet items working for Critical Healthy Living Practices (CHLP)

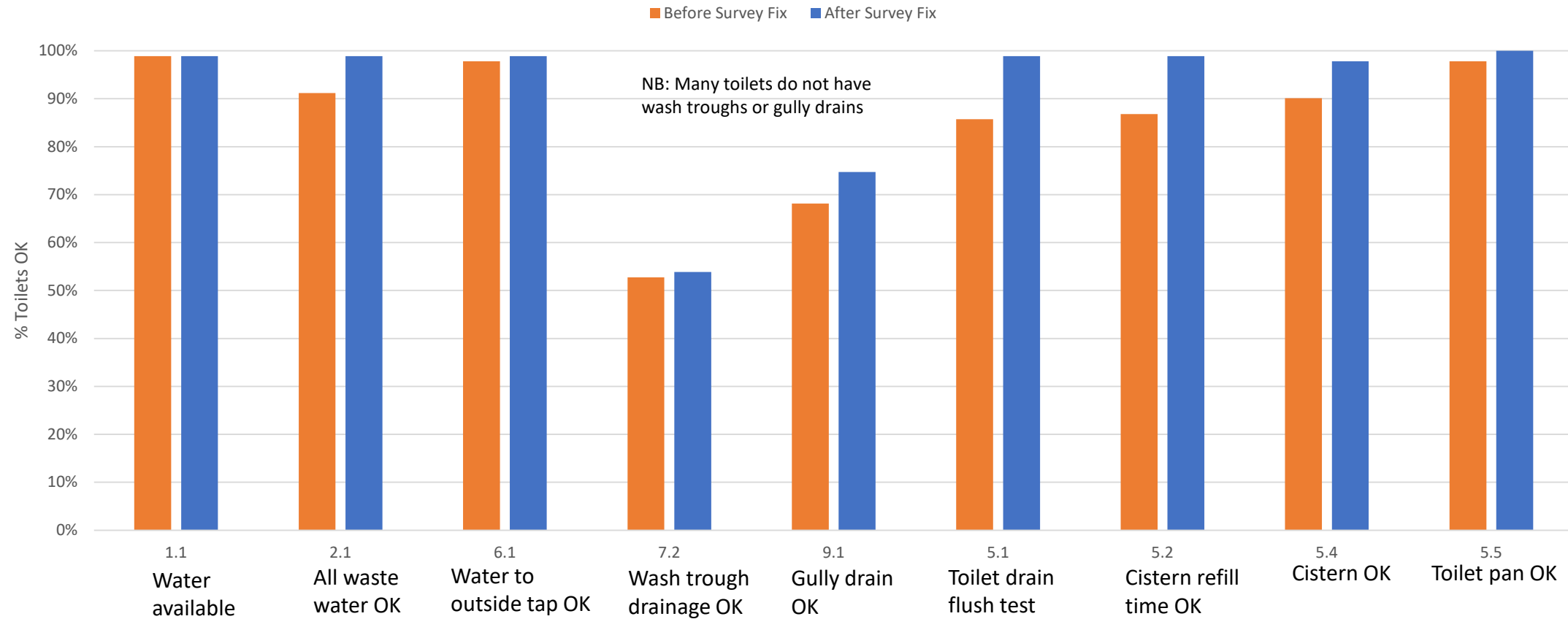


CHLP scores for each survey-fix, recording scores both before fix work and after

Measuring health improvements through function rates of 'health hardware' – Survey-fix 1 (Mar 2017)

Survey:	SF1
Start Date:	27/03/2017
End Date:	30/06/2017

Comparison of toilet items working for Critical Healthy Living Practices (CHLP)



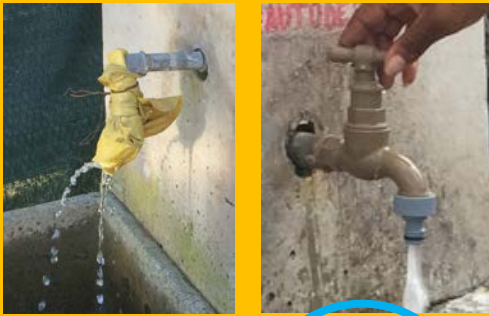
SAFETY: WATER, WASTE
CONNECTED

ALL DRAINS WORKING

FLUSH TOILET WORKING

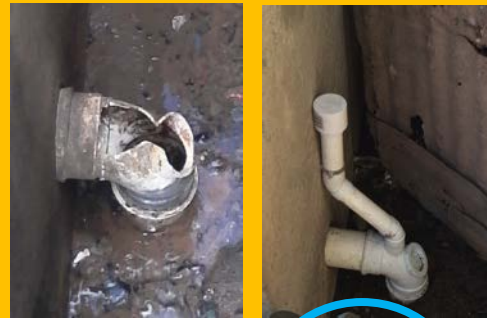
Measuring health improvements through function rates of 'health hardware' – an example of some key improvements from Survey-fix 1 (Mar 2017)

6.2 Tap OK



77% → 100%
working before survey-fix
working after survey-fix

5.1 Toilet drain OK



86% → 100%
working before survey-fix
working after survey-fix

5.4 Cistern OK



90% → 99%
working before survey-fix
working after survey-fix

5.5 Toilet Pan OK



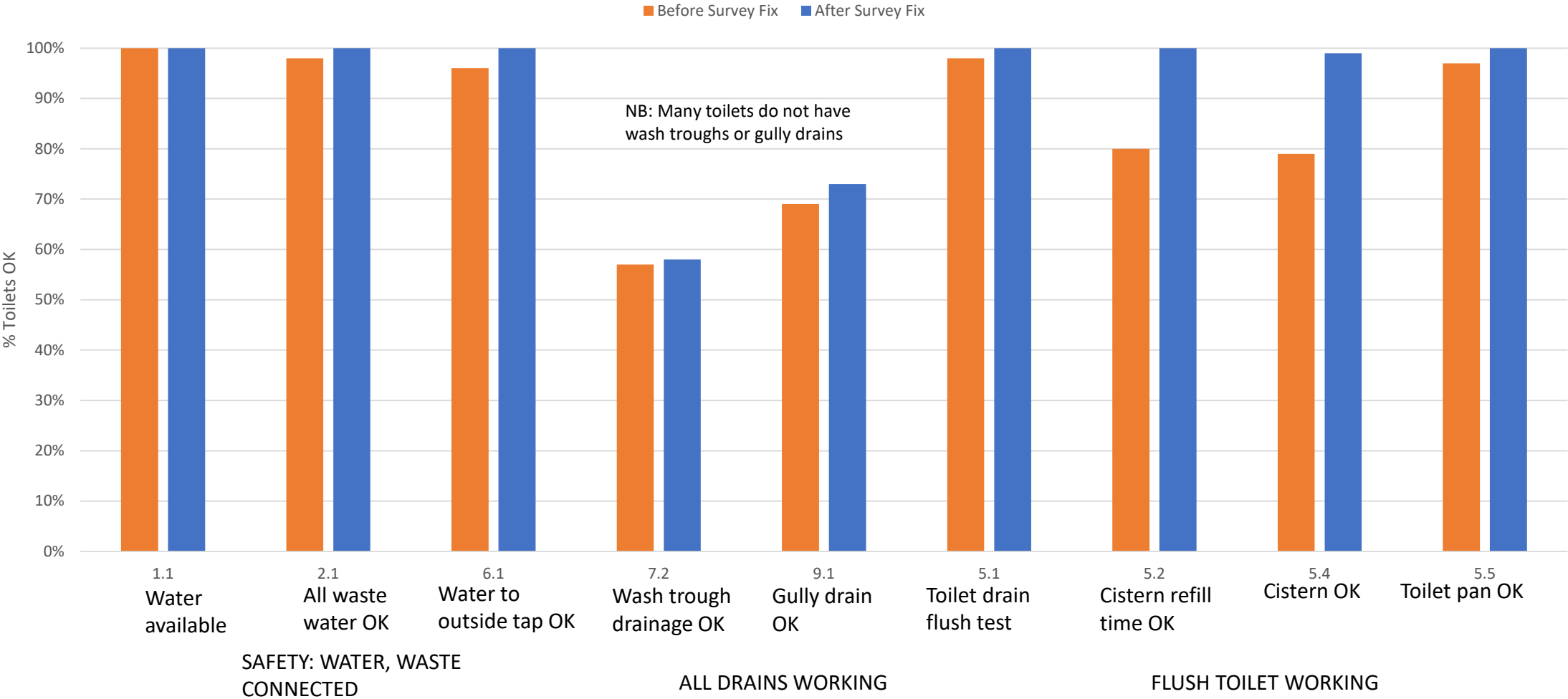
98% → 100%
working before survey-fix
working after survey-fix

The WASSUP survey-fix team were able to immediately improve function rates of critical health hardware to 100% for most toilets – at the time the survey-fix was completed

Measuring health improvements
through function rates of ‘health
hardware’ – Survey-fix 6 (July 2018)

Survey:	SF6
Start Date:	1/07/2018
End Date:	30/09/2018

Comparison of toilet items working for
Critical Healthy Living Practices (CHLP)



Measuring health improvements through function rates of 'health hardware' – an example of some key improvements from Survey-fix 6 (July 2018)

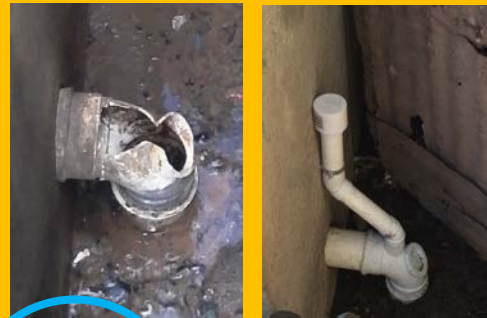
6.2 Tap OK



87% → **100%**
working before survey-fix
working after survey-fix

Strong improvements were recorded in taps and drains still working at survey-fix 6 compared with survey-fix 1

5.1 Toilet drain OK



98% → **100%**
working before survey-fix
working after survey-fix

5.4 Cistern OK



79% → **99%**
working before survey-fix
working after survey-fix

The surveys highlight that existing cisterns, in particular their internal mechanisms have a short life span and require regular maintenance to keep them functioning

5.5 Toilet Pan OK



97% → **100%**
working before survey-fix
working after survey-fix

The cost savings of Primary Healthcare services through preventative health – fixing toilets



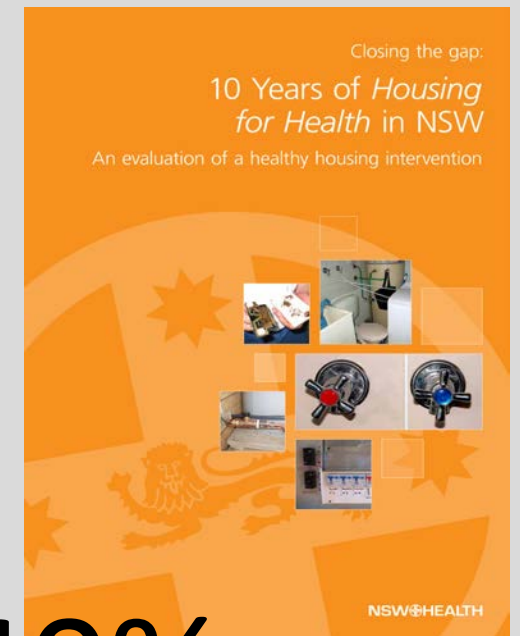
Universal primary healthcare is, and always will be desperately needed for the residents of Diepsloot.

With limited government funds how can the numbers of visits residents need to take to their local hospital or health clinic be reduced? How can funding be spent to prevent illness from occurring in the first place?

Fixing taps and unblocking drains will improve the health of thousands of people across Diepsloot, and save millions in reducing government primary health care costs



In Australia, an evaluation of a similar survey-fix program (Housing for Health) in Aboriginal Communities (fixing taps, unblocking drains etc) found the number of times people report to health clinics and hospitals with environmental health related illness (acute respiratory, gut, skin and ear infections) reduced by a massive 40%



40%

reduction in hospital separations for key environmental health related illnesses

New hospital to be built in Diepsloot

23 November 2017 - 11:56
BY PENWELL DLAMINI



A new hospital will be built in Diepsloot to provide services to residents in the township.
Image: Phasut Waraphisit via 123RF

Summary of MTBH Program and key findings for the future

Currently NO
funding for
upgrades or
ongoing
repairs of
toilets



Leads to
dysfunctional toilets,
loss of water and
poor health



Money for
upgrades from
City of Joburg and
Johannesburg
Water



Some additional
small ongoing
money for **repair
and maintenance**



1,087,291 kL/yr
R 19,571,241 /yr

Massive water and
cost savings for
Johannesburg Water



Sustainable local
employment



Savings in
infrastructure
upgrades



Improved health
outcomes for
residents



Savings to the
primary health
budget